

OBRYAN CHERT: AN OVERLOOKED AND MISUNDERSTOOD LITHIC RESOURCE

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Introduction

Cultural resource management projects frequently suffer from insufficient background knowledge regarding the study area, whether it be the local flora, fauna, geology or archaeology. The relevant literature and local informants are utilized to varying extents and with variable results, while ancillary "off-site" field work is usually minimal or non-existent. Matters may have improved somewhat from the days when a "one size fits all" introduction was standard fare in CRM reports (Murphy 1989) but inadequate background research clearly is not just a thing of the past.

In terms of identification of lithic resources, a very basic tenet has been well expressed by Blakeman (1977):

"The first step, then, in the classification of chert from a site should involve an intensive study of the local geology. This familiarization process should include the compilation of previously existing reports and the in-field collection of samples of each type of chert from outcrops and alluvial deposits, if these occur, within the study areas."

In "Ohio country" CRM work, Blakeman's dictum has been more honored in the breach than in the observance. A classic example of willful misidentification in the face of reliable information provided by local informants is the confusion of local Dunkard freshwater chert with distant sources of Brush Creek flint in the studies of the Bluebird and Saddle sites, Marshall Co., West Virginia (Church and McDaniel 1992, Stevenson and Erickson 1992). This confusion led to an elaborate and totally imaginary scenario of Monongahela and Middle Woodland Indians trekking 100 km to the southwest in order to obtain Brush Creek chert when they could (and did) pick up blocks of Dunkard freshwater chert in nearby streams (Murphy and Morton 2000). The present article details a more recent instance of failure to perform adequate background research on local lithic materials and reviews changes in geological stratigraphic nomenclature that impact the archaeological identification of Ohio cherts.

"Type I Chert" at the Davisson Farm Site, Lawrence Co., Ohio

A recently published account of the Phase I-III study of the Davisson Farm Site (33-Le-619) along the Ohio River in Lawrence Co., Ohio (Purtill 2001, 2001a, 2002b, 2007; Purtill et al. 2001) describes a multicomponent site, predominantly Late Archaic in age as determined by radio-

carbon dates and artifact typology. The site is located along the southern edge of the third terrace and extending nearly to the bedrock Ohio River bluff, in the northwest quarter of Section 8, Hamilton Township, Lawrence Co., Ohio. Unfortunately, no other reference to local bedrock geology occurs in the published Davisson Farm Site report. The approximate location of the site is shown in Figure 1.

Lithic resources reported from the Davisson Farm Site include Brush Creek, Paoli, Kanawha Black, local pebble chert, Ohio Flint Ridge, Upper Mercer, Zaleski Wyandotte, "other chert," "unidentified chert," and "type I chert" (Purtill 2007:55). The last named is actually the most abundant at the site, consisting of 698 artifacts and forming 15% of the total artifacts (including debitage) recovered, strongly suggesting, as Purtill concludes, that the chert is derived from a local source. Percentages for other "Type I chert" artifact types are revealing: primary flakes, 19.3%; secondary flakes, 19.2%; finishing flakes, 11.9%; flake fragments, 16.6%; shatter/block fragments, 13.9%; but cores, a whopping 42.6%). Unfortunately, finished, "typable" projectile points are rare at the site (N = 38 according to Purtill's Table 3.3, although the text (p. 56) states 39) and only 0.6% are of type I chert; if 46 additional point fragments are included, the percentage of "type I chert" points rises to 3.5%, most of the broken artifacts being of unidentified chert (3 5.7%). Of Stage 1-2 preforms, 11.6% are of type I chert and 10.5% of Stage 3-4 preforms. The relative dearth of finished projectile points of type I chert could indicate 1) that more finished projectile points were manufactured elsewhere and brought to the site (although debitage indicates the use of Brush Creek, Paoli, and Kanawha cherts to manufacture some projectiles on site). It may also be the result of 2) a masking effect produced by the natural abundance of local type I chert on site (also suggested by the relatively high amount of Type I Chert "cores," or 3) a difficulty in proveniencing the lithic material of finished artifacts. It is also possible that 4) for some reason type I chert projectile points were removed from the site, although trade, export, or undue loss in hunting seem unlikely.

Before this informal but nonetheless unfortunate designation of "Type I chert" becomes further embedded in the literature, it would be helpful to identify its provenience, which is not nearly so mysterious as Purtill would make it seem. He describes the material as highly fossiliferous and ranging in color from white to gray to buff, generally of low quality and coarse grained with a dull luster. Several large

pieces exhibited Vickery's "soft" cortex, indicating that they were derived from the local area rather than by extensive glacial and/or alluvial transport. Local informants suggested that chert outcrops existed in the immediate area "but no description of the chert was provided and [no outcrops] were located." (Purtill 2007: 78). Previous reports (e.g. Hastings 1968) generally refer to this as "locally available nodular flint" but appear to lump it with alluvial gravels.

Speculation

In an earlier, unpublished report, Purtill (2001 a: 15) revealed that, "present speculation is that this material is from the Cambridge Limestone formation which is *well developed and cherty* in the Lawrence Co. area." This misleading speculation about Cambridge chert is repeated verbatim the following year in a report on various sites just across the county line in Green Township, Scioto Co. (Purtill 2002a). What Purtill's source (Stout and Schoenlaub 1945: 104-105) actually states is that throughout Ohio the Cambridge "only locally assumes a cherty or flint phase." Further, in Lawrence Co. the limestone, although "exceptionally well developed" is "commonly of high purity. The cherty matter is *generally small in quantity*." The single stratigraphic section given in Stout and Schoenlaub describes a two inch layer of "Limestone, flinty" in an outcrop in Mason Township, near Arabia. Stout's (1916) more thorough report on the geology of Lawrence Co. does not even mention chert in the Cambridge member, although it does describe chert in the underlying Brush Creek member. Field work by the author around Arabia and elsewhere in Lawrence Co. confirms that there is comparatively little chert in the Cambridge Limestone member.

In another Phase II survey for five Lawrence Co. sites to be impacted by construction of the South Point Industrial Park there is not even "speculation" about the Cambridge limestone and only a brief reference to Stout and Schoenlaub, Carlson, and Vickery's comments on Vanport and Brush Creek chert in eastern Lawrence Co. (Purtill 2002: 5). Even this vague reference is removed from the published 2007 report.

It can be said, based on more careful reading of Stout (1916) and Stout and Schoenlaub (1945) that minor amounts of Brush Creek chert and miniscule amounts of Cambridge chert are available on the outcrop in eastern Lawrence Co. Some of these outcrops undoubtedly also contribute alluvial pebble chert to Symmes Creek and other streams, so that some eventually finds its way into Ohio River gravels, including those on

which the Davisson Farm Site lay; but only examination or pebble count studies of these gravels would determine to what extent and this has not been done. This is a striking lacuna, since Purtil avers that in the case of Kanawha and Paoli cherts, the presence of Vickery's "soft cortex" demonstrates that these materials were derived from outcrop rather than from alluvial chert, a somewhat problematic conclusion since the original weathered cortex found on the flint outcrop can survive lengthy stream action. But that question aside, what about Purtil's Brush Creek chert: was it obtained from local alluvium (most likely, in my opinion) or from rather distant outcrops? The nearest outcrops of Brush Creek or Cambridge limestone containing chert suitable for prehistoric use are 10-12 miles or more distant from the Davisson Farm Site, but few of these outcrops show indications of having been utilized in prehistoric times. Somewhat more distant outcrops along the Burning Springs anticline in West Virginia were very intensively used but this material would also be more likely available from alluvial deposits derived from the Little Kanawha and the Ohio. Although, like Purtil's early musings about Cambridge chert, this remains speculation, the idea is based on the actual occurrence of chert outcrops and is susceptible to testing.

Obryan ("southern Vanport") Chert

It has been known for some time that what Stout and others have long called Vanport in southern Ohio is actually distinct from the massive Vanport limestone of western Pennsylvania and northeastern Ohio as well as from the major Vanport flint deposits of Flint Ridge in Muskingum and Licking Co. As long ago as 1968 study of conodont microfossils indicated that the Vanport limestone of central and northeastern Ohio (named for a now destroyed outcrop at Vanport, Beaver Co., Pennsylvania) was not the stratigraphic equivalent of the "Vanport" of southern Ohio and northeastern Kentucky (Merrill 1968). Subsequent study of fusulinids and plant spores produced a much better understanding of the correlation of specific rock-stratigraphic units and called for radical revision of the stratigraphic nomenclature of Ohio, Kentucky, and West Virginia. The "southern Vanport," with which we are dealing at the Davisson Farm Site and exposures elsewhere in Scioto and Lawrence Co., actually correlates with the Obryan limestone member, named for an exposure along U. S. Route 23 across the Ohio River from Ironton and only about 15 miles southeast of the Davisson Farm Site (Rice, Kosanke, and Henry 1994). It is actually younger than the true Vanport of northern Ohio. Kagelmacher (2001: 97) appears to be the first archaeologist to recognize this change in interpretation and geologic nomenclature, but few have followed his lead.

It is regrettable that no one associated with the study of the Davisson Farm site

either prior to initiation of the field work or sometime during the ensuing seven years before a report was published bothered either to consult the geologic literature in detail or, for that matter, walk across U.S. Route 52 and examine the bedrock on the adjacent ridges. Nearly 100 years ago, Stout (1916: 333, 591) described the Ferriferous or Vanport limestone in Hamilton Township, Lawrence Co., and adjacent Green Township, Scioto Co., as containing flint. Much of this information is repeated in Stout and Schoenlaub's 1945 study on the occurrence of flint in Ohio, along with some additional information. Specifically, in the south central part of Section 3, Hamilton Township, two feet of flint and ore are described at an elevation of 845 feet above mean sea level (Stout and Schoenlaub 1945: 71). The authors add that in the western part of the township, "especially on the hills facing the Ohio River, it [Vanport member] is represented by irregular masses and deposits of flint." The flint is described as light gray in color, porous in texture, and calcareous in composition, of inferior grade, doubtfully usable for implements. About 10 inches of such material was observed on the ridge in the southeastern part of Section 4, Hamilton Township, and scattered blocks strewn on the surface were present elsewhere along the high ridges. As for Scioto Co., Stout and Schoenlaub (1945: 73) describe "scattered lenses of flinty or cherty material along the ridges from the Scioto-Lawrence county line westward to about one mile west of Ohio Furnace." In short, bedded outcrops of Purtil's unidentified Type I chert occur within a half mile of the site, and float material could easily have been traced to the source or readily identified from the literature.

Recent field work confirms and amplifies Stout's observations regarding the presence of chert along the ridges over-

looking the Davisson Farm Site. Outcrop locations are indicated by bold-face O's in Figure 1. Specifically, Obryan chert was found outcropping along the western and southern margins of the flat, plateau-like ridgetop north of High Rock, a massive pillar of Clarion Sandstone about a half-mile northwest of the Scioto/Lawrence county line, overlooking U.S. Route 52 and the Ohio River valley (Fig. 2). Substantial blocks of tan, fossiliferous chert were found at the point where Bonzo Road turns sharply northeastward (Fig. 3, 4). At the outcrop northwest of High Rock, block shatter fragments have been impacted by recent removal and burning of a tree stump, indicating how easily the chert is altered by heat and demonstrating the fact that all such "heat-treated" chert need not be indicative of deliberate alteration by prehistoric flint-workers (Fig. 5). Normally, the chert varies from nearly white to gray to tan and brown in color but may be much darker and nearly black. This has also been noticed in outcrops in Jackson Co., although this dark chert tends to weather to lighter colors. Contrary to Purtil (2007: 78), while it is generally coarse grained with a dull luster, it may also be of higher quality and can be quite lustrous. Some rather dark brown colored material vies with Flint Ridge chalcedony in terms of luster and translucency; it could in fact be confused with Knife River flint, as has some Flint Ridge Vanport flint, except for the presence of marine fossils. In fact, the abundance of marine fossils is one of the most distinctive qualities of this local "Type I chert," as Purtil recognized. Regardless of color or luster, Obryan chert tends to consist of a fossil "hash." Fusulinids occur, as do sponge spicules and bryozoan fragments, but the most conspicuous fossils are small terebratulid brachiopods. While similar fossils may occur in Brush Creek and Cambridge cherts, the materials seen in eastern Lawrence Co., as well as Meigs,



Figure 1 Portion of Greenup 7.5' quadrangle showing approximate location of 33Le16, 33Le618, and 33Le619. Obryan chert occurrences indicated by (O).

Vinton, and Athens Co., tend to be less fossiliferous. Very dark examples of Obryan chert could be confused with Boggs or Upper Mercer cherts, which does not occur in Scioto and Lawrence Co., but tend to be more translucent on thin edges than typical Boggs and Upper Mercer as seen in outcrops to the north. (Kagelmacher illustrates several typical samples of Obryan chert from Jackson Co.)

It should be noted that Merrill (2002) has suggested that the name Obryan limestone itself has been applied to several distinct and as yet unnamed stratigraphic units. He would apply the term Obryan only to the limestone and chert facies occurring along the Ohio Valley and in southern Lawrence and Scioto Co. For the present, however, geologists formally distinguish only the Vanport of northern Ohio and the Obryan of southern Ohio.

Examination of a local artifact collection made by David L. McGoron of Ironton, Ohio, reveals many examples of artifacts made from Obryan chert. Typical examples are shown in Fig. 7 and 8. Specific site provenience is not available but this material was found in Lawrence and Scioto Co. and with the possible exception of the very

dark specimen in the top row of Figure 8, which is most likely Upper Mercer chert, all represent Obryan chert. Several in Figure 7 are fire-reddened, although this may have been unrelated to their manufacture, so that the term "fire-reddened" seems preferable to "heat-treated."

Conclusions

Before one can make meaningful inferences about prehistoric acquisition of raw materials, not to mention more fanciful theories about prehistoric travel and trade, the raw materials need to be accurately identified in terms of stratigraphy and provenience. In the present instance of Purtil's "Type I chert," careful reading of the readily available geologic literature cited, together with a few hours of field work in the area adjacent to 33Le-618 would have greatly benefited his reports and obviated the need for definition of a "Type I chert." Obryan chert is a distinctive and widely used lithic material that found considerable prehistoric use in Lawrence, Scioto, and Jackson Counties, where its presence should be anticipated in future archaeological work.

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Figure 4. Another block of Obryan Chert from northeast of High Rock.



Figure 5. Block fragments of Obryan chert showing fire-reddening.

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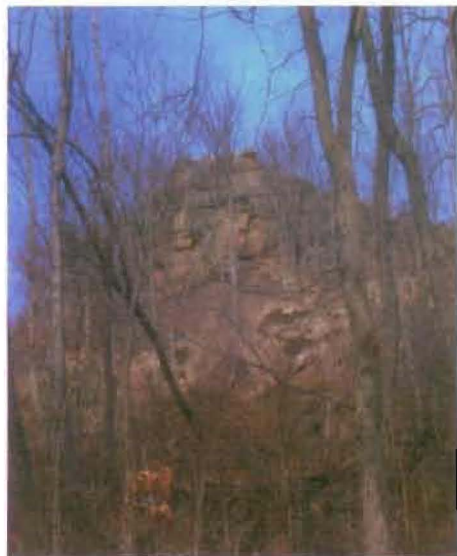


Figure 2. High Rock looking northeast from base of hill.



Figure 3. Block of Obryan Chert exposed northeast of High Rock.

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Figure 6. Additional Obryan chert fragments from northwest of High Rock.



Figure 7. Obryan chert artifacts from McGoron Collection.



Figure 8. McGoron Collection. Black example in upper row is probably Upper Mercer chert.